

LIFELINE TO THE WARFIGHTER

SPACE PROVIDES CRITICAL ELEMENT FOR COMBAT

BY LOUIS ARANA-BARRADAS

by Staff Sgt. Jeremy Lock

Space is still the Air Force's new frontier. Less than 15 years ago, relying on spaced-based capabilities to direct battles on the ground was a relatively new capability for the U.S. military. Not even in their wildest dreams would most people think it would one day be possible for a pilot to sit in an air-conditioned room at some stateside base and "fly" an unmanned aerial vehicle over Afghanistan to gather intelligence, carry on surveillance, do reconnaissance — even fire Hellfire missiles at enemy forces.

But things have changed. Today, a joint and multinational force is fighting an ever-expanding Global War on Terrorism that's nothing like past conflicts. When commanders go into combat, they now take their space operators with them — relying on them to provide real-time expertise on the added capabilities new space-based "gadgets" provide them.

"We cannot go to war and win without space," said Gen. Lance W. Lord, commander of Air Force Space Command.



Maintenance workers perform last minute preflight checks on a Predator before a mission at a forward-deployed location. The unmanned aerial vehicle was designed in response to a Department of Defense requirement to provide persistent intelligence, surveillance and reconnaissance information to the warfighter while minimizing harm to troops. Since 2002, the system has also had an armed reconnaissance role — carrying a targeting system and the ability to fire Hellfire anti-tank missiles.

THE NEW FRONTIER

When on the battlefields of Iraq, Staff Sgt. Nick Reddinger doesn't have time to wonder how all the pieces fall in place that let him call in an air strike. He just gets on the radio and calls it in using coordinates he gets from "painting" targets with a laser range finder.

But the tactical air controller does know that when he calls in a close air support strike, the jet fighters or bombers overhead — Air Force, Navy, Marine or a coalition partner — will drop their deadly "smart" bombs where he tells them.

That's because high overhead — in space — a global po-

by Royal Air Force Sgt. Gareth Davies



Maj. Chris Holinger tracks a mission inside the Combined Air Operations Center at a forward-deployed base. With crews operating around the clock, CAOC officials plan, control and track all coalition missions throughout the region. They also direct time-sensitive targeting, battlefield coordination, theater missile defense, joint search and rescue, special operations support and other mission-critical operations.

sitioning system satellite relays the Airman's target information to the aircraft loitering over the area. The data goes into the bomb's brain, which aims it with deadly accuracy at the enemy below.

"Precision-guided munitions give me a 'warm fuzzy,'" Sergeant Reddinger said, because he knows "the targets I want hit will be hit." The sergeant, from Blyria, Ohio, serves with the 19th Expeditionary Air Support Operations Squadron at Balad Air Base, Iraq.

Space-based assets allow tactical controllers to "spend a lot less time on the mic explaining the target and more time saying 'cleared hot,'" so pilots overhead can drop their bombs, said Staff Sgt. William Shepherd, a joint terminal attack controller with the squadron.

GLOBAL NETWORK

Today, a string of satellites is the backbone of the communica-

tions, command and control infrastructure the military depends on. Over the past decade there has been a "shift in understanding" about what space can bring to the fight. Today's joint warfighters are more appreciative of "the decisive, precise combat effects space brings to the battlefield," General Lord said.

And there are a lot more space operators than before. The general commands the nearly 40,000 space professionals who run a global network of satellite command and control, communications, missile warning and launch facilities and maintains the combat readiness of the nation's intercontinental ballistic missile force.

The products of this organization are no longer just a "nice to have capability," he said. Space is on display in Iraq and Afghanistan.

"Space is so integrated into the way we do business as a military, I would be hard pressed to say the Army uses it more than the Navy, or fliers use it more than the guys on the ground," he said.

But one thing is certain: The integration into the U.S. military of these space warriors has transformed the modern battlefield, making warfare more precise, more effective and less destructive.

That's a good thing for ground troops in Iraq and Afghanistan and elsewhere around the globe. Because operating where the bullets fly and roadside bombs explode requires constant monitoring of the environment where ground troops work.

That's something of which the senior space operator in Iraq is aware. Col. Kevin McLaughlin, the director of space forces

THE WARFIGHTERS' EYES IN THE SKY

The Space Innovation and Development Center makes its home at Schriever Air Force Base, a fairly isolated installation on the rolling plains of Colorado. While the high-altitude landscape is a serene vision of laid-back cattle ranching, the quiet, bustling hub of space wargaming is anything but.

The mission of the center is to ensure the Air Force is wringing all possible capabilities from its space-based assets. They do this by gathering groups of experts in all different fields of space who then seek out problems and ways to eliminate, counter or mitigate them.

The SIDC's mission to support warfighters with space solutions and develop concepts for space superiority is carried out by five organizations: Tactical Exploitation of National Capabilities; the Space Battle Lab; the Integration Division; Plans, Programs and Requirements; and the 595th Space Group.

"The Center is engaged in the Global War on Terrorism across the full-spectrum of military operations," said Col. Sigfred Dahl, director of TENCAP. "Whether you examine the daily combat operations in the theaters, the combat enablers of communications, navigation, planning or mission support, you find the people and products of the SIDC. Space is as much an effect as it is a place, and the center is the focal point of many of those effects."

The center is the home of the pre-eminent developers of space-enabling technologies and products that allow Airmen to prosecute the war on terrorism.

"In simple terms, we are taking the capabilities that space affords, and delivering those capabilities to our trigger-pullers at a bewildering pace," the colonel said.

The 595th SG's space aggressor squadrons have taken the first steps toward making U.S. forces more capable and aware of threats to their systems.

"Using actual foreign [or simulated] systems, space aggressors attack friendly forces by jamming their Global Positioning System receivers or disrupting satellite communications signals," said Lt. Col. Todd

Freece, 527th Space Aggressor Squadron commander.

Exercise participants must then demonstrate the ability to detect, adapt and succeed in their mission despite the degradation or loss of space services.

"The goal of this program is to give the forces their first taste of 'space combat' in a controlled and forgiving exercise arena rather than on the battlefield," Colonel Freece said.

The Space Battle Lab seeks out emerging technologies from both commercial and Department of Defense sources to enhance and expand space effects for U.S. Forces, said Colonel Dahl.

Toward that end, they have been the "driving force" behind the Air Force's initial forays into near space, new approaches to space asset tasking and devising new uses for directed energy.

So whether the warfighter is a lone fighter pilot engaging with GPS guided bombs, or an Army infantryman trying to securely communicate enemy coordinates, SIDC personnel continue to find the best way to put space effects into their hands.

— Tech. Sgt. Kate Rust
Air Force Space Command Public Affairs



(Front to back) Staff Sgts. Dwayne Mayberry, Dave Reed, Dave Heatherly and Richard Chavez, maintenance technicians from the 576th Flight Test Squadron at Vandenberg Air Force Base, Calif., install the command destruct and telemetry systems on a Minuteman III ICBM for an operational test launch. These capabilities, and many others, are what help enforce the mission of the Space Innovation and Development Center at Schriever Air Force Base, Colo.

Lt. Col. Wade Tolliver drops a 1,000-pound Joint Direct Attack Munition from an F-22A Raptor during a weapons evaluation mission. More than a dozen aircraft can carry JDAMs. Colonel Tolliver is assigned to the 27th Fighter Squadron, Langley Air Force Base, Va.

by Master Sgt. Michael Ammons

SCHOOLHOUSE STRENGTHENS SPACE ADVANTAGE



by Master Sgt. Ken Wright

Capt. Ryan Yates, course director, teaches students from a wide variety of Department of Defense organizations at the NSSI.

Space technology may seem worthy of only rocket scientists but Air Force Space Command's National Space Security Institute is putting out-of-this-world concepts and applications within reach.

The NSSI was activated Oct. 18, 2004, in response to a space commission finding that the Department of Defense was not yet on course to develop the space professionals it needs.

"The Space Commission recommended that space professionals be provided with both depth and breadth of knowledge: the NSSI is doing just that," said Lt. Col. Jack Stuart, director of the Space 300 course.

The institute, with 12 courses ranging from space basics to advanced navigation operations, provides the tools and environment necessary to develop the space cadre of the future.

Although owned and operated by

AFSPC, the scope of the NSSI is national.

"We used to be referred to as the 'little red school house,' but we're beyond that now," said Colonel Stuart. "The nation looks to us to educate it on space."

The NSSI graduates approximately 1,400 students a year whereas its predecessor, the Space Operations School, graduated about 400. The student body consists of 68 percent blue suiters with a range of Soldiers, Sailors and Marines as well as members of the national space organization.

Regardless of their service, students attending the NSSI are not idle participants. Many of the courses trek through tabletop exercises and scenario-based modeling simulations that replicate the field in every way — without the sand.

The key to the reality of the virtual training resides within the walls of the NSSI's Space Power Lab. The lab, which won the 2005 Chief of Staff Team Excellence award, uses 30 computer stations to simulate the different cells space Aerospace Expeditionary Force augmentees will see in theater.

"Our folks are graduating knowing the checklists and procedures that they'll be using upon deployment

— they're ready to rock and roll when they step off the plane," Lt. Col. Frank Gallagher said.

The success of the lab and the courses it augments has only ignited the desire to offer more. The staff has 14 courses ready to add to the curriculum as well as planning for some distance learning courses. Their only limitation — "bucks, bodies, buildings and billets—we're always looking for more," Colonel Stuart said.

However, there isn't a shortage of students — something that is not likely to change anytime soon as the need for space expertise increases.

"We think having space capability in a war makes the difference between throwing a bullet and shooting a bullet—it gives us an asymmetric advantage," said Colonel Stuart. "There's a documented relationship between bandwidth and knowledge; the more knowledge, the more bandwidth. That increased knowledge translates into true power that gives us an advantage in any force-on-force conflict."

— Tech. Sgt. Jennifer Thibault
Air Force Space Command
Public Affairs

for U.S. Central Command Air Forces, is responsible for bringing to bear all critical space capabilities to support command operations. The Texan from Big Spring knows ground troops depend on them.

"Modern military forces in the war on terrorism are light, lean, mobile, autonomous and expeditionary," the colonel said. These forces feed off a constant flow of information they need for "positioning and timing, mobile communications, ISR and warning to achieve their varied and dangerous missions."

"In many cases, this data is primarily provided by space systems," the colonel said. "Without these critical space capabilities, our forces would lose situational awareness and connectivity."

That could spell disaster at a critical time when ground forces are trying to find a specific target or location, are involved in a firefight or are just trying to get from one place to another in countries with few, if any, road signs. That's where satellite communications, GPS and imagery help make operating in Iraq and Afghanistan successful and effective.

"For example, precision navigation and timing provided by GPS enables us to provide exact air and land coordinates, which is critical to virtually every aspect of military operations — regardless of weather or geography," General Lord said.

BOMBS ON TARGET

At no time is that accuracy more critical than when Airmen have to put bombs on target — like when ground forces under fire call for close air support. But with GPS, the accuracy of where the bombs land is now measured in feet — not miles. When bombs have GPS guidance systems, pilots can put them precisely where tactical controllers want them. Even if that smart bomb is dropped from the belly of a bomber flying at 30,000 feet. These precision strikes — like on targets in downtown Baghdad during the invasion of Iraq — prove the importance of space assets in reducing damage to non-tactical targets.

Sergeant Shepherd has called in some of those types of strikes. He gets as specific as telling a pilot to put a bomb through the "easternmost window, third story on the north face of a building." In that kind of strike, "accuracy becomes pretty important," he said.



by Tech. Sgt. Shane A. Cuervo

Staff Sgt. Michael Huffman and Senior Airman Ricky Williams, tactical air control party members, acquire Global Positioning System coordinates for an air strike in Iraq.

As the use of space assets continues to gain converts, space operators will continue to provide ground forces timely support with fewer friendly fire incidents. Space will enable these operators to see and act faster, allowing the military — in general — to react to situations more rapidly and decisively. Such is the case in the proving grounds of Iraq and Afghanistan.

Fewer troops will be in harm's way as Iraq transitions into a new form of government and takes a greater role in its own protection, Colonel McLaughlin said. During this time, delivery of space assets will be even more critical.

"In many cases, space effects can be delivered in a manner that requires very little U.S. presence on the ground and almost no signature for those Iraqis anxious to assume more responsibility for their own future," the colonel said.

In the meantime, the war against insurgents continues in Iraq and Afghanistan. That guarantees that space operators will stay busy. So will tactical controllers on the ground — who will continue to rely on their unseen space partners to help them put bombs on targets.

Space will continue to play a large role in the fight. Space assets will help in communications, surveillance, intelligence, search and rescue and in locating targets ground troops cannot reach safely. And Sergeant Reddinger said he'll continue to play his part. ♡

[Editor's note: At the time of publication General Lord was the current commander of AFSPC and his replacement had not been named.]

SPACE COMMAND AND CONTROL

While images of people deploying thousands of miles from home at the "tip of the spear" are traditionally thought of when one mentions warfighters, there are silent partners in the United States providing command and control support, directly ensuring the success of military operations within the theater of conflict.

Space — the ultimate high ground — adds a new dimension to military supremacy. At the center of this is the Joint Space Operations Center, at Vandenberg Air Force Base, Calif.

Major Gen. William Shelton, commander of Joint Space Operations, coordinates all U.S. spacelift, on orbit satellite operations, global missile warning and space control on behalf of U.S. Strategic Command's Joint Functional Component Command for Space and Global Strike.

The general provides the guidance, intent and priorities for the JSpOC so it can direct

space assets to provide space effects for all branches of the military to integrate and fuse space capabilities, resulting in a single integrated space picture.

These capabilities are critical to heightened situational awareness. They ensure accuracy of GPS guided munitions and provides communication networks to interlink theater C2.

"The information derived from space-based reconnaissance, blue force tracking, Global Positioning System satellites, and our communications satellites are critical for the success of our warfighters," General Shelton said.

Space is now vital to every phase of military operations, giving us an asymmetric advantage that is a force multiplier on the battlefield.

— Lt. Col. Nevin Taylor
14th Air Force



A Minuteman III streaks across the sky after launching from Vandenberg Air Force Base, Calif.



Explosive ordnance disposal and tactical air control party Airmen look over a site after a Marine Corps F/A-18 Super Hornet released a 2,000 pound Joint Direct Attack Munition on a cave linked to insurgent activity in Iraq.



Lt. Col. Jim Roman (right), talks with Army Sgt. 1st Class Steven Jamie about the timing of communications to Army ground units while aboard an E-8C Joint Surveillance and Target Attack Radar System aircraft. Colonel Roman is in charge of the mission crew, decisions made onboard the aircraft and all outgoing communications. Sergeant Jamie is an airborne target surveillance supervisor and communicates with Army units and common ground stations, using various radio and satellite communication devices.